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10/713,777

11/13/2003

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EXAMINER

DIACOU, ARI M

ART UNIT

PAPER NUMBER

3663

MAIL DATE

DELIVERY MODE

06/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/713,777 | Applicant(s) NAKAGAWA ET AL. | |
| | Examiner Ari M. Diacou | Art Unit 3663 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-7 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-7 and 12-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. In the remarks filed 4-3-2007, applicant argued the following:
 - A. That the claims have been reverted to what they were before RCE, and prosecution can proceed.
2. In the remarks filed 11-6-2006, applicant argued the following:
 - B. That Naniwae, Li, and Mak do not teach all the features of the claimed invention.
3. Argument A is convincing, the amendment of 4-3-07 is fully responsive.
4. Arguments B is moot in view of the new grounds of rejection, which has been necessitated by amendment.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Naniwae (USP No. 2002/0159705).

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- Regarding claim 1, Naniwae discloses an optical module arranged in an optical transmission path, comprising:
 - an optical amplifying unit configured with a semiconductor, [Fig. 2, #9] [¶ 0029]
 - wherein the optical amplifying unit amplifies in high gain light input from the optical transmission path; and [¶ 0029]
 - an optical element configured with a semiconductor, [Fig. 2, #5 #6 #7] [¶ 0029]
 - wherein the optical element includes **an optical modulator**, an optical switch or a directional optical coupler and propagates the light amplified by the optical amplifying unit to the optical transmission path. [¶ 0029]
 - *and gain of the optical amplifying element is sufficiently high that insertion loss of the optical module is completely compensated.* [This is a limitation of intended use discussed below, Naniwae's device is capable of being operated this way]

[Paragraph 0029 says that a modulator or amplifier can be placed in any one of the sections 5-9, it is the opinion of the office that this reads on an amplifier being placed in #5 #6 and #7 and a modulator in #9]

7. The italicized clauses above are essentially method limitations or statements or intended or desired use. Thus, these claims as well as other statements of intended use do not serve to patentably distinguish the claimed structure over that of the

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reference. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 512 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ 2nd 1647

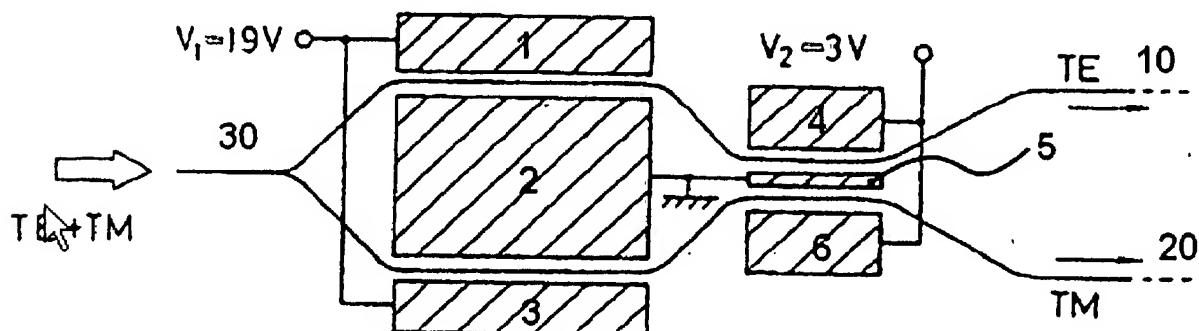
Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.

Apparatus claims cover what a device is not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

As set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim. In this case, light in any of its forms, frequencies, modulations, phases, polarizations or intensities is the article worked upon.

Claim Rejections - 35 USC § 103

8. This figure is a recitation of Figure 2 in the European application EP 0 445 347 A2, cited by the applicant, edited to include reference numerals.



9. Claims 4-7 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over, Li (USPAP 2002/0076133) in view of Mak et al. (EP 0445347 A2). Li discloses the invention with all of the limitations of claim 1. Mak discloses:

- Regarding claim 4, Mak discloses the optical module according to claim 1, wherein the optical element comprises:
 - a first optical waveguide through which light from the optical amplifying unit propagates; [Fig. 2, #10]
 - a second optical waveguide through which light propagates, wherein the second optical waveguide optically crosses the first optical waveguide to form a crossing portion; [Fig. 2, #20]
 - a first lead electrode arranged along the first optical waveguide and the second optical waveguide; [Fig. 2, #5]
 - a pair of first control electrodes arranged along the first optical waveguide so as to face each other, with the crossing portion therebetween, to which a control voltage controlling a crossing state is applied via the first lead electrode; [Fig. 2, #4 & #6]
 - a second lead electrode arranged so as to face the first lead electrode; and [Fig. 2, #2]
 - a pair of second control electrodes arranged along the second optical waveguide so as to face each other, with the crossing portion

therebetween, to which the control voltage is applied via the second lead electrode. [Fig. 2, #1 & #3]

- Regarding claim 5, Mak discloses the optical module according to claim 4, wherein the first lead electrode and the second lead electrode are arranged so as to face each other, with the first optical waveguide and the second optical waveguide arranged therebetween. [Fig. 2, #5]
- Regarding claim 6, Mak discloses the optical module according to claim 5, wherein the first lead electrode and the second lead electrode are arranged substantially parallel with each other. [Fig. 2]
- Regarding claim 7, Mak discloses the optical module according to claim 4, wherein the first optical waveguide and the second optical waveguide are arranged in a physically solid crossing state. [Fig. 1]
- Regarding claim 12, Mak discloses the optical module according to claim 4, wherein each of the first control electrodes and the second control electrodes have a control electrode piece divided into a plurality of parts in the longitudinal direction. [Fig. 2, #2 & #5]
- Regarding claim 13, Mak discloses the optical module according to claim 12, wherein each of the first optical waveguide and the second optical waveguide has a PIN structure in which an I-core layer [38b] is put between a P-cladding layer [38c] and an N-cladding layer [38a], in regions other than the regions immediately below the control electrode pieces, which are adjacent to each other in the longitudinal direction, wherein corresponding control electrode

piece [31a and 31b] is deposited on the P-layer, the optical waveguide immediately below a region between the control electrode pieces adjacent to each other in the longitudinal direction has a structure in which the P-layer is removed from the PIN structure [See valley between 31a and 31b], and the N-layer in the PIN structure is a common layer to the first optical waveguide and the second optical waveguide [38a].

- Regarding claim 14, Mak discloses the optical module according to claim 4, wherein each of the first optical waveguide and the second optical waveguide has the PIN structure of a three-layer type or an I-layer buried type [38 a/b/c], wherein in the case of the three-layer type, the first control electrode and the second control electrode are deposited respectively on the P-layer of the first optical waveguide and the second optical waveguide [31a and 32b], and in the case of the I-layer buried type, the first control electrode and the second control electrode are deposited respectively on the I-layer of the first optical waveguide and the second optical waveguide, N-layer of the first optical waveguide and the second optical waveguide are deposited, and the first optical waveguide and the second optical waveguide have a common N+ layer to which a DC bias voltage is applied [38a].

but fails to disclose an optical amplifier producing amplified TE and TM signals. Li teaches a semiconductor optical amplifier, as well as the desirability and practice of using that optical amplifier as part of a signal-switching apparatus [¶ 0047-0051].

Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer)

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at the time the invention was made, to create an optical module that switched amplified input light, for the advantage of preserving or increasing the signal to noise ratio.

Conclusion

10. While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

11. The references made herein are done so for the convenience of the applicant. They are in no way intended to be limiting. The prior art should be considered in its entirety.

12. The prior art which is cited but not relied upon is considered pertinent to applicant's disclosure.

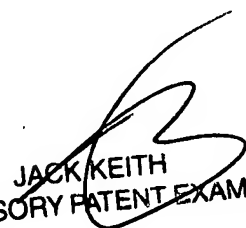
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Ari M. Diacou/
6/11/2007


JACK KEITH
SUPERVISORY PATENT EXAMINER